# Technics
## by Panasonic

**Direct Drive Automatic Turntable System**

# SL-1700

**Operating instructions**

Read these instructions completely, before operating this set.

We want to thank you for selecting the SL-1700, Direct Drive Automatic Turntable System.
For optimum performance, we recommend that you read these instructions carefully.

## Parts identification

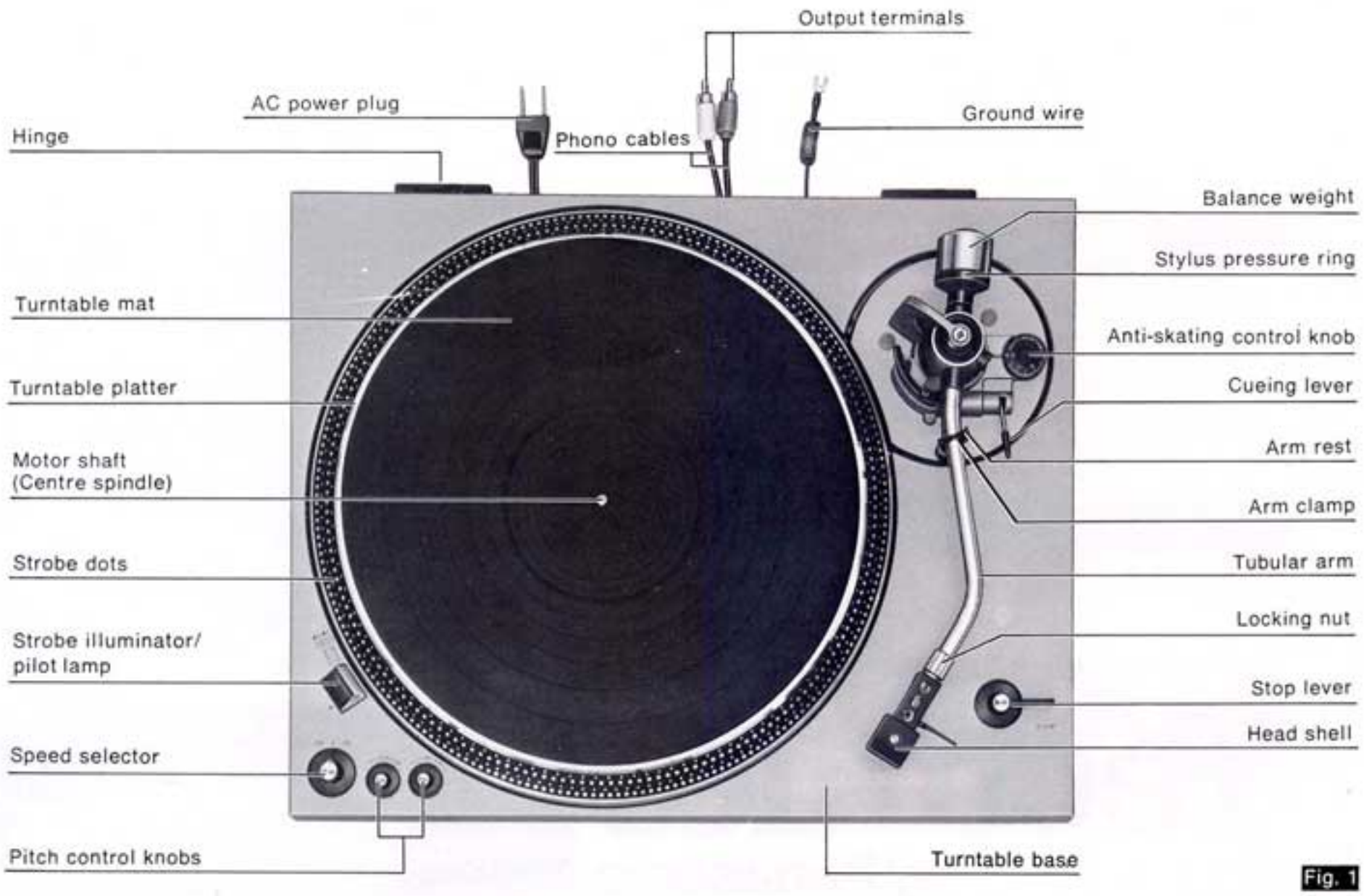



Fig. 1

## Assembly and set-up

**Caution:**
Never connect the AC power plug before the assembly has been completed.
Attach the dust cover last, so that assembly of other parts and adjustments can be made efficiently.

**❶Check the parts.**

| | | | |
|---|---|---|---|
| Turntable unit | 1 | 45 r.p.m. adaptor | 1 |
| Turntable platter | 1 | Special oil | 1 |
| Turntable mat | 1 | Balance weight | 1 |
| Dust cover | 1 | Head shell | 1 |
| | | Overhang gauge | 1 |

**❷Remove the transport spacers.**
Remove 3 spacers for transportation (located at left-hand front corner, right-hand rear corner, and then the tonearm base), and the tape fastening the tonearm. (See Figs. 2 and 3)

Fig. 2

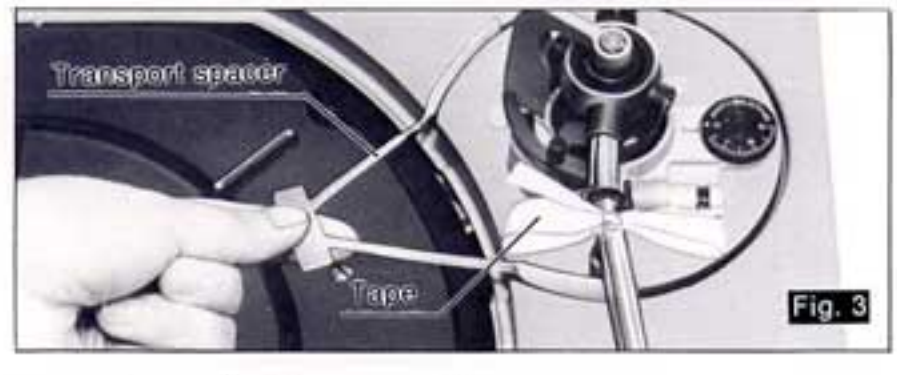
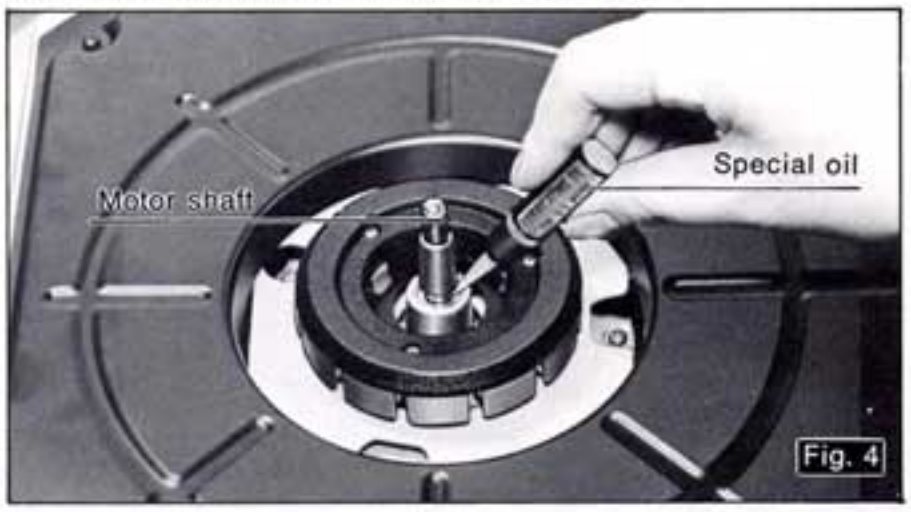



Fig. 3

**"Warning: To prevent fire or shock hazard, do not expose this appliance to rain or moisture."**

**❸Apply two or three drops of oil to the motor shaft using the furnished oil container.** (See Fig. 4)

Although the unit has been lubricated before shipping from the factory, apply a few drops of oil to the motor shaft for assurance. After that, application of two or three drops of oil once every 2000 hours' operation or so is sufficient. The time interval is much longer than that of conventional type motors (200–500 hours), so do not apply too much oil, nor more frequently than necessary. Never use any other type of oil.




**❹Installation of the turntable platter**

1. Place the turntable platter on the motor shaft (centre spindle).
2. Place the turntable mat on the platter.

**Note:**

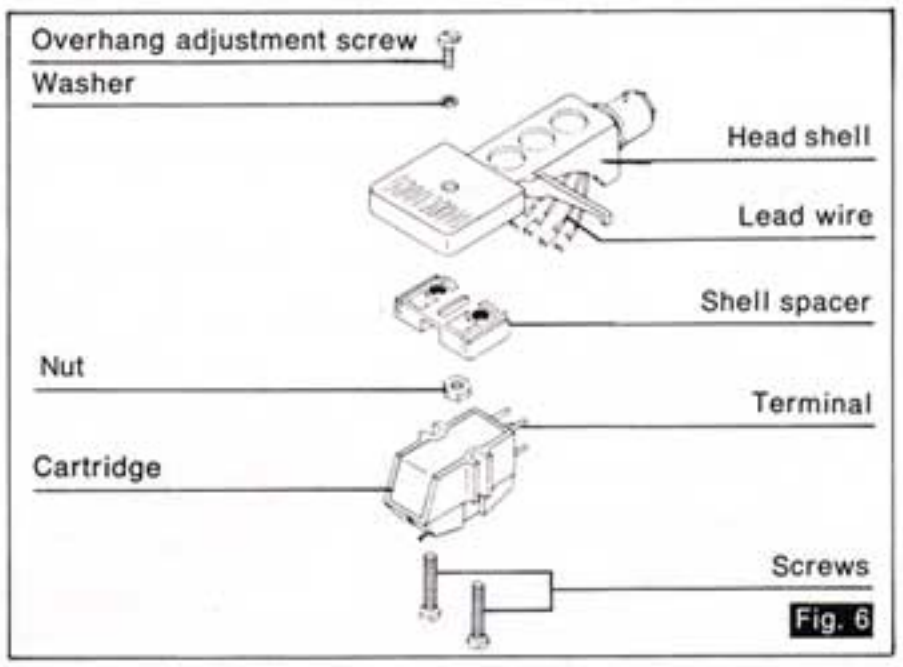
1) The rotor is connected to the reverse surface of the turntable platter. (The magnet of the motor is attached to the turntable platter.) To maintain optimum performance as specified, extra care should be taken to prevent adhesion of dust or iron filings to the magnet and not to damage the magnet by dropping it.
2) Do not remove the three screws for securing the magnet. (See Fig. 5)
   Should the position of the fixed magnet be altered by loosening the securing screws, the rated performance of the unit can not be guaranteed.

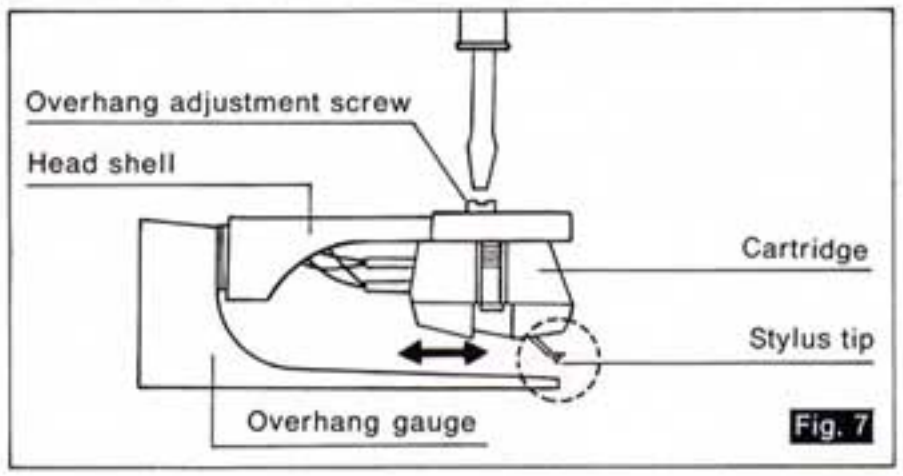
**❺Installation of the cartridge (optional)**

1. Connect the lead wires to the cartridge terminals.
   White (L +) .....Left channel +
   Blue (L −) .....Left channel −
   Red (R +) .....Right channel +
   Green (R −) .....Right channel −
2. Install the cartridge to the spacer, and tighten it with screws provided with the cartridge. (See Fig. 6)
3. Insert the head shell into the gauge. (See Fig. 7)
4. Loosen overhang adjustment screw and move the cartridge forward or backward until the stylus tip lines up with the edge of the gauge.
5. Tighten adjustment screw without moving the cartridge.

**Note:**

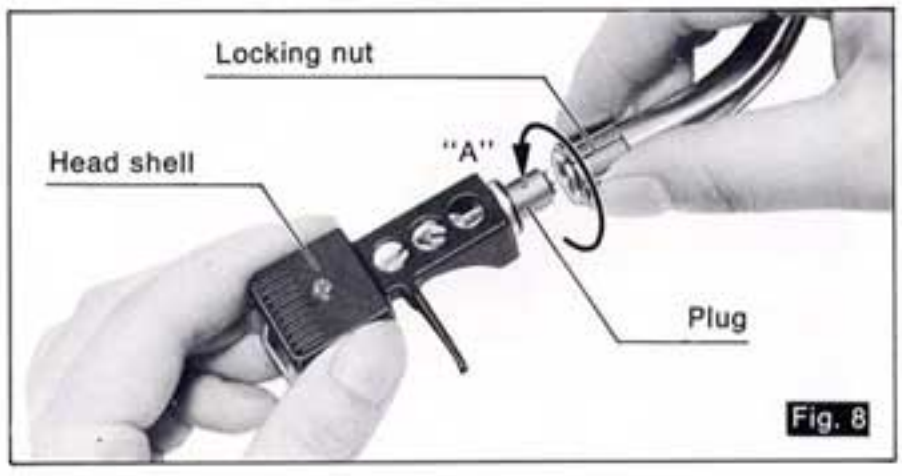
1) Your cartridge is now adjusted for lowest tracking error and minimum distortion.
2) This gauge is exclusively designed for this tonearm.




**❻Installation of the head shell** (See Fig. 8)

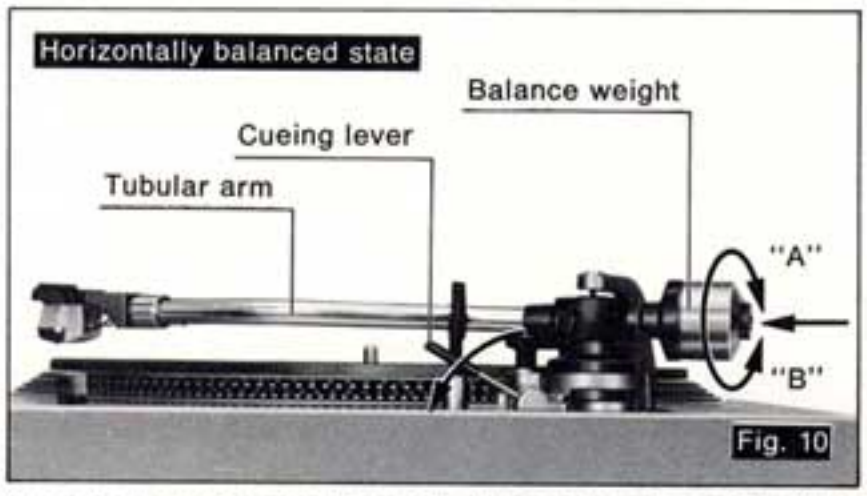
Insert the plug portion of the head shell into the front end of the tubular arm, and turn the locking nut clockwise (in the direction shown by the arrow "A"), with the head shell held horizontally to secure firmly.




**❼Adjustments of the horizontal "0" balance and the stylus pressure**

1. Insert the balance weight onto the rear shaft of the tonearm. (See Figs. 9 and 10)
2. Remove the stylus cover, if your cartridge has one.
3. Release the arm clamp (Fig. 9) and lift the tonearm from the arm rest to free the tonearm.

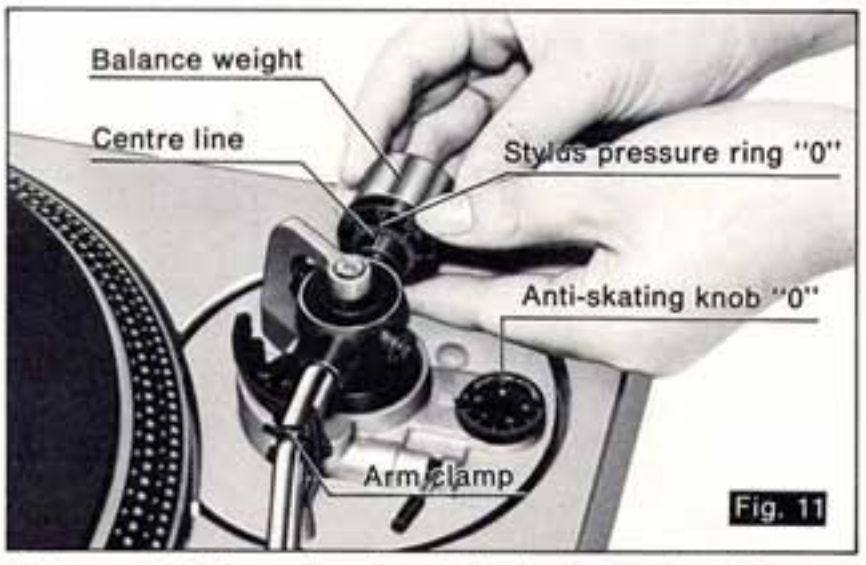
4. Turn the entire balance weight clockwise (indicated by the arrow "A") or countrerclockwise (indicated by the arrow "B") until the tonearm is approximately balanced horizontally. (See Fig. 10)




5. After the tonearm is horizontally balanced, temporarily fix the tonearm by the arm clamp. (Refer to Fig. 11)
   Hold the balance weight stationary with fingers as shown in Fig. 11 and rotate only the stylus pressure ring to bring the numeral "0" of the ring into alignment with the centre line on the tonearm rear shaft. (The adjustment of the horizontal balance is now completed.)

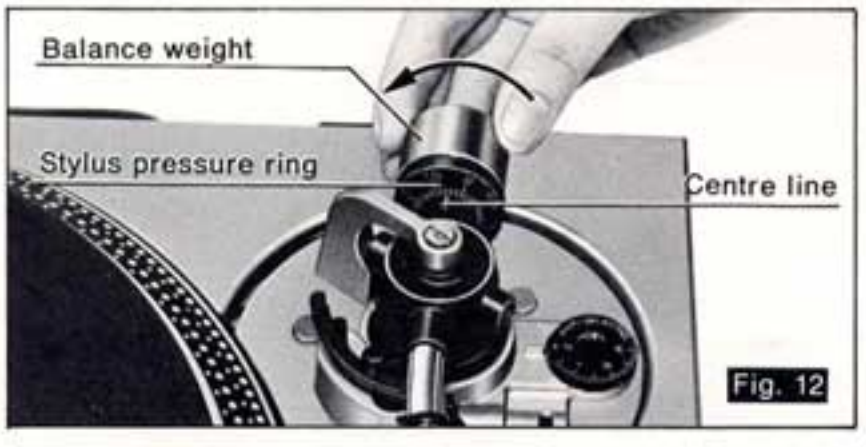
**Note:**

1) During the adjustment of the horizontal balance, be sure that the stylus tip of the cartridge does not contact the turntable mat or turntable base.
2) Ensure that the anti-skating knob is at "0" position. (See Fig. 11)
   There are cases where the tonearm may sway or flow slightly at the position of "0" due to the highly sensitive rotational part of the tonearm, but this side force is trivial and presents no inconvenience.




3) Ensure that the cueing lever is in the lowered position as shown in Fig. 10.
4) Make certain that the speed selector is in the "•" position, the balance adjustment is easily made as the turntable platter remains stationary.

6. After adjusting the horizontal balance, turn the balance weight clockwise in the direction of the arrow and align the correct stylus pressure. (Follow the cartridge manufacturer's recommendation.) (See Fig. 12)




**Note:**

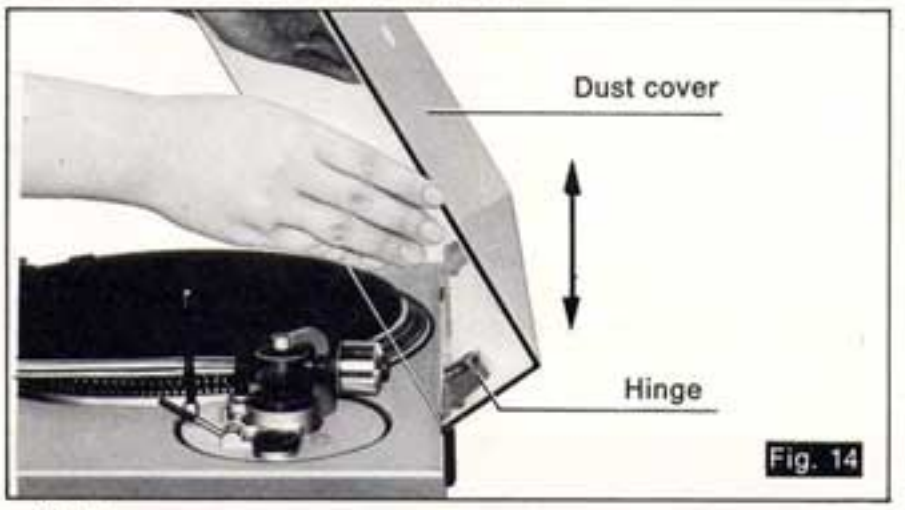
1) As the stylus pressure ring rotates together with the balance weight, proper stylus pressure can be selected by directly reading the graduated ring.
2) Set the stylus pressure to the maximum value of your cartridge in cases where the record has an extremely high recording level, or where the unit is operated in a room at low temperature or in places in which the unit is liable to be subjected to vibrations.

**❽Anti-skating force control**

Set the anti-skating force control to the same value as that set for stylus pressure. (See Fig. 13)

**❾Installation of the dust cover (See Fig. 14)**

Place the dust cover into position from directly above, holding it at both sides. For detaching the dust cover, be certain first to raise it as illustrated before removal.




**Note:**

Opening or closing of the dust cover during playing should be made as gently as possible, since this may not only cause harmful vibrations, but also result in skipping of the stylus.

**❿Placement**

1. Use the unit in a stable and horizontal position, where there is little or no vibration.
2. Use the unit as far away from the speakers as possible and isolate the unit from sound radiation from them.
3. Do not place the unit where it is exposed to direct sun, dust, moisture or heat.
4. Keep it in a well-ventilated place.

**⓫Connect the AC power plug.**

Connect the AC power plug to the AC socket.
In cases where the AC power plug is connected to the outlet (AC outlet) of the amplifier, receiver and the like, make sure that the wattage indicated on the outlet corresponds to the turntable's requirements before connecting the power plug.

**⓬Connect the output terminals.**

| Output terminals | | Amplifier or Receiver |
|---|---|---|
| L (White) | → L | Channel |
| R (Red) | → R | Channel |
| E (Spade lug) | → GND | |

**Note:**

Be sure to connect the ground terminal to the amplifier or receiver. If this connection is not made or is loose, a power source "HUM" will result.

# How to play

**❶Pull the stop lever once.**
Before playing, be sure to pull the stop lever once towards you as shown in Fig. 15. This is necessary to correct possible engagement or shifting of tonearm drive section with the auto-return mechanism.

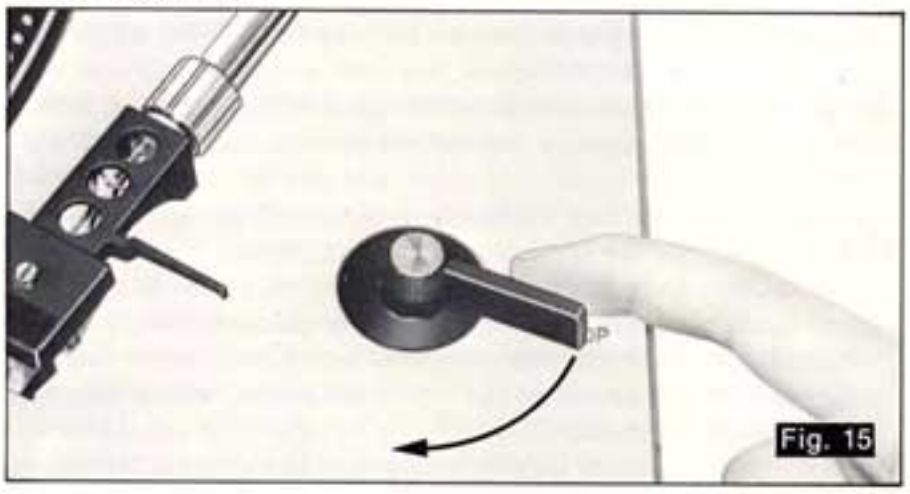


Fig. 15

**❷Set the speed selector to the desired record speed.** (See Fig. 16)

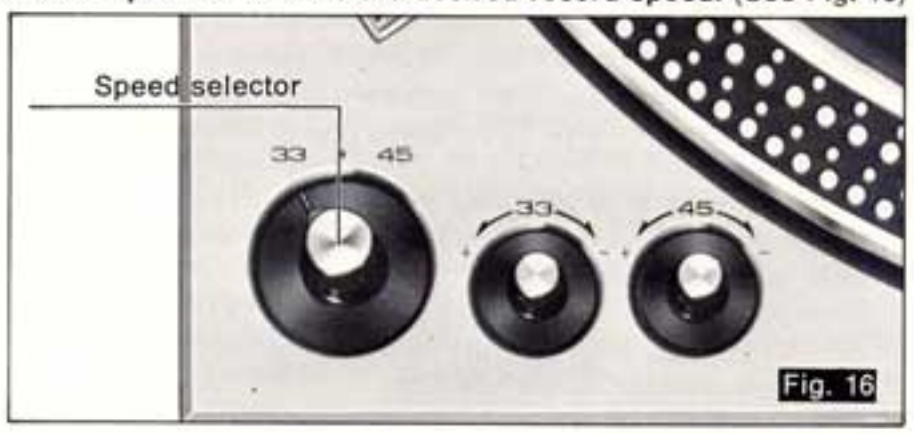


Fig. 16

**❸Release the arm clamp.** (Refer to Fig. 9)

**❹Lift the cueing lever as indicated by the arrow.** (See Fig. 17)

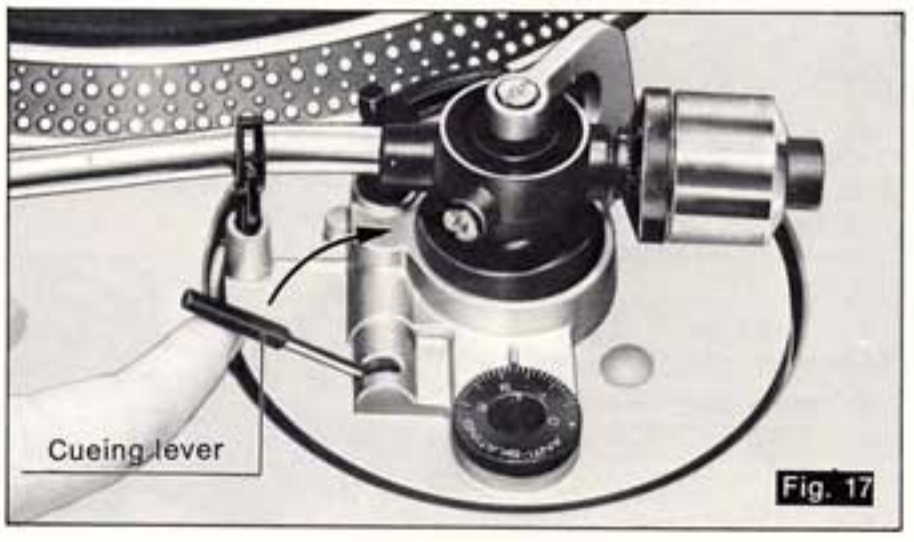


Fig. 17

**❺Move the tonearm over the record and then lower the cueing lever. The tonearm will descend slowly onto the record and play will begin.**

**❻When finished playing, the tonearm will automatically return to the arm rest (auto-return) with the power shut off, and the turntable platter will stop rotation.**
(The turntable platter will rotate for a short time due to its inertia.)

1) When the tonearm is moved towards the record, the power is turned on and the turntable platter will start rotating. If the speed selector is positioned at "•", the turntable platter will not rotate, although the strobe illuminator is lit.
2) If you play a 45 r.p.m. record with a large centre hole, use the furnished adaptor on the centre spindle.
3) For temporary suspension of playing, raise the cueing lever, and the stylus tip of the cartridge will be raised from the record.
4) To stop playing during operation, pull the stop lever toward you.
The tonearm will automatically return to the arm rest with the power shut off, and the turntable platter stops rotating.

# Adjustments

**❶Adjustment of the arm lift height** (See Figs. 18 and 19)
The arm lift height (distance between the stylus tip and record surface when cueing lever is raised) has been adjusted at the factory before shipping to approximately 5 to 10 mm (3/16" to 25/64").
If the clearance becomes too narrow or too wide because of the physical size of the different cartridges on the market, turn the adjustment screw clockwise or counterclockwise, at the same time pushing the arm lift down.
**Clockwise rotation**
—distance between the record and stylus tip is reduced.
**Counterclockwise rotation**
—distance between the record and stylus tip increases.

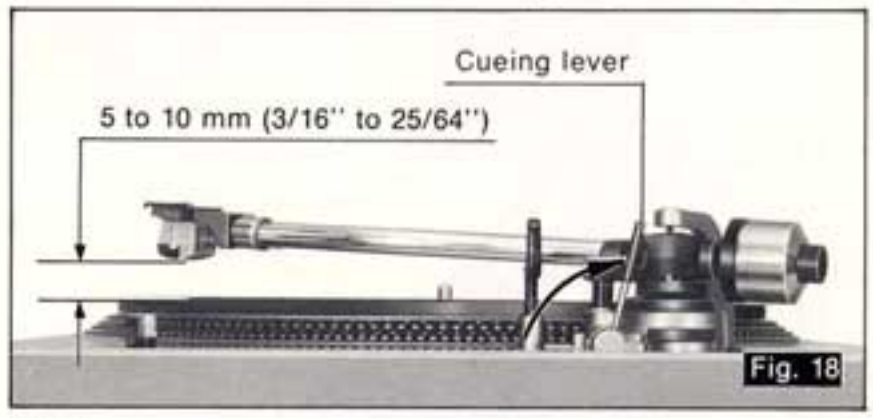


Fig. 18

**Note:**
As the adjusting screw has a hexagon head, be sure to make the adjustment while depressing the arm lift.

Fig. 19

**❷Adjustment of tonearm automatic return point** (See Fig. 20)
In some cases, the tonearm will tend to return to its rest position before the record has finished playing. In other cases, it will not return to the rest position even after the record has finished. Rotation of this screw in the proper direction will correct either condition.
**Clockwise rotation**
The tonearm will return to its rest later.
**Counterclockwise rotation**
The tonearm will return to its rest earlier.

Fig. 20

❸**Speed adjustment (with pitch control knobs)** (See Figs. 21, 22 and 23)
Strobe dots are set on the tapered rim of the turntable platter according to the power frequency and the number of revolutions of the records. Make adjustment, referring to strobe dot indication. (See Fig. 21)

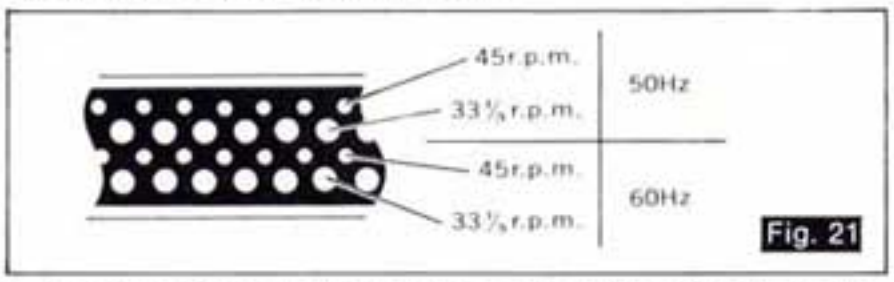


Fig. 21

1. Set the speed selector to the number of revolutions to be adjusted. (See Fig. 22)
2. Release the arm clamp and raise the cueing lever.
3. Move the tonearm to a slight extent towards the turntable platter.
   The strobe illuminator/pilot lamp will illuminate the strobe dots.
4. While turning the pitch control knobs either to "+" side or "−" side, adjust to such an extent that the strobe dots of the turntable platter look as if they were stationary.
   The state under which the strobe dots seem to be stationary represents the correct speed.

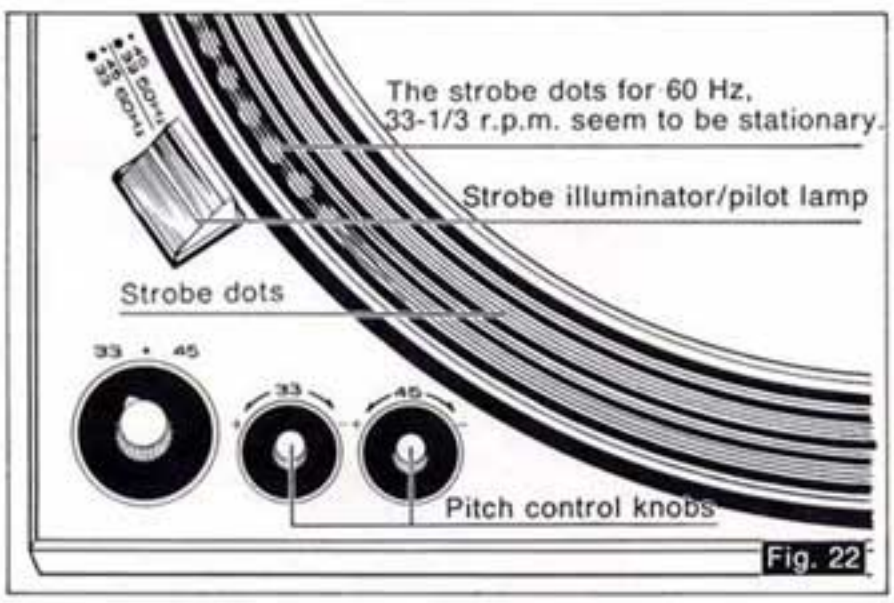


Fig. 22

**"+" direction**
This increases the speed of the turntable rotation, and the strobe dot pattern seems to flow in the same direction as the turntable platter.

**"−" direction**
This decreases the speed of the turntable rotation, resulting in a state opposite to that in the "+" direction.

**Note:**
**Strobe dot pattern**
The strobe illuminator/pilot lamp of this unit employs the commercially available power source. The frequency of such power source, when actually measured, has a fluctuation of about 0.2%. As such a fluctuation of the power source affects the strobe illuminator, the strobe dot pattern also seems to fluctuate to a certain extent. But the unit is not affected by the fluctuations of the power source, since a D.C. motor is employed.

5. If the desired speed can not be obtained by the variable pitch controls, turn the speed adjustment screws with a screwdriver for further adjustments. (See Fig. 23)

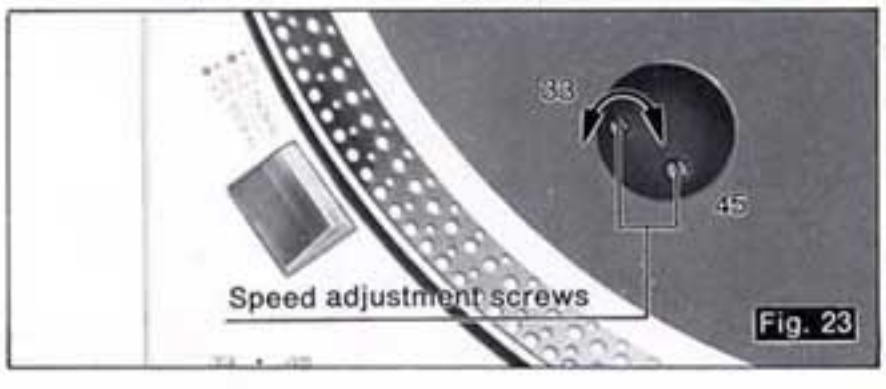


Fig. 23

# Maintenance

❶**Extra care should be taken in handling the turntable platter.**
The turntable platter has a rotor (the magnet of the motor) directly connected to it. Therefore, the turntable platter should not be removed from the motor shaft unnecessarily, since adhesion of dust or iron filings onto the magnet results in deterioration of the performance. Should it become necessary to remove the turntable platter, be sure to pull the AC power plug out of the socket.

❷**Wipe the dust cover and turntable base with a soft, dry cloth.**
Never use any cleaners containing alcohol, benzine or thinner. Use of a chemical dust cloth and the like should also be avoided. Be sure that the dust cover is not exposed to insecticide spray, as cracks or blurs may result.
To remove stubborn finger prints or grease spots detach the dust cover or disconnect the AC power plug and use a soft cloth damped with a mild soap and water solution.

❸**Dust and dirt adhering to the stylus tip or the record should be carefully removed.**
If used with dust and dirt adhering to the stylus tip, the stylus will not fit into the sound groove of the record correctly. This may not only result in the deterioration of tone quality, but cause undue wear of the record and the stylus tip itself.
Use a brush having soft tips, moving it from the base to the tip of the stylus carefully for removing dust and dirt.
The record should also be carefully wiped with a record cleaner of high quality.

❹**Before detaching or attaching the head shell, be sure to turn the volume control for the amplifier or receiver to "0" position, or to turn off the power.**
Detaching or attaching of the head shell, with the volume control turned high, may not only result in unpleasant noises, but cause damage to the speakers.

❺**When finished playing, be sure to secure the tonearm by the arm clamp.**
After finished playing, if the unit is not to be used for some time, care should be taken to secure the tonearm for the protection of the stylus tip.
For the same reason, the stylus cover should also be attached.

❻**Wipe the head shell terminals from time to time.** (See Fig. 24)
Adhesion of dust and dirt to the head shell terminals may give rise to contact faults, thus resulting in increased "HUM" noise or non-transfer of sound to the speakers. Use a soft dry cloth or the like for wiping the head shell terminals.

Fig. 24

❼**When you use other head shells, be careful about the head shell configuration.** (See Fig. 25)
When other types of head shells are employed, the handle portion of the head shell may strike against the inner upper surface of the dust cover during returning movement of the tonearm. In such a case, we recommend to play with the dust cover open.

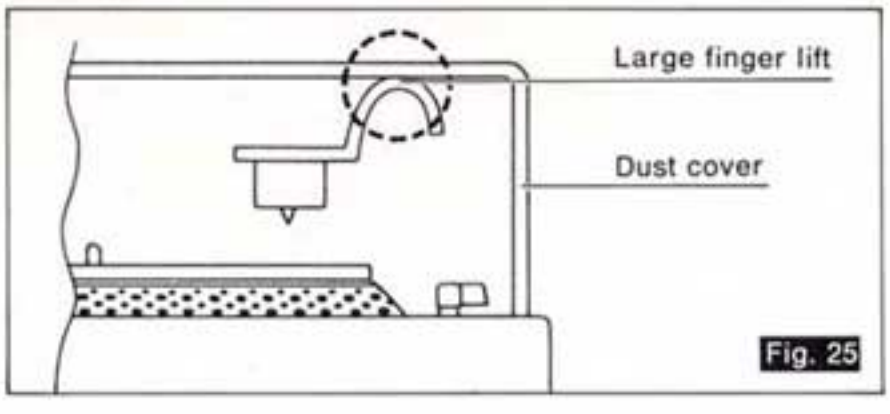


Fig. 25

# Features

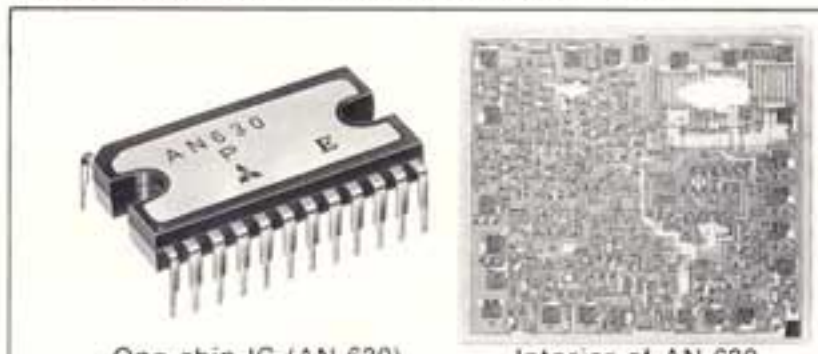
## Turntable section

**■The newly developed double-insulate vibration-damping unit, unique in Technics, was developed through high mass design placing particular emphasis on acoustic quality (See Fig. 26).**
The turntable platter and the tonearm are installed on the base and solidly girded through the integral construction of the main base and the bottom of the case, while the entire base is floating in stable equilibrium with respect to the main turntable base through insulators, composed of springs and a viscoelastic material.
The base is protected against vibrations by the viscoelastic material and is further weighted by the metallic board. The main turntable base is also provided with an insulator superior in vibration damping characteristics for protection from undesirable external vibrations. As a result, a combined effect is obtained through the use of two insulators to maintain excellent absorption and cut-off of external vibrations and local resonance from speaker output thus effecting remarkably improved feedback prevention.

**■Motor construction peculiar to Technics in which the rotor of the motor is integrally connected to the turntable platter. (See Fig. 26)**
In Technics turntable systems we took the lead in the world by putting the Direct Drive system on the market with a marked improvement in the performance of turntables. Since then, we have developed numerous turntables of high performance, furnishing new topics of conversation each time.
One of these achievements is the motor construction of this unit, unique and singular in the world, in which the rotor of the motor is directly connected to the turntable platter.
Moreover, the motor base has been integrally connected to the turntable base of diecast aluminum for presenting turntable systems of higher accuracy and rational construction.

**■Silent reliable auto-mechanism.**
Precision-molded resin is employed in the drive section of the auto-mechanism to reduce distracting operating noise. Therefore the load sustained by the drive system is small and combined with the use of the highly sensitive gimbal suspension tonearm, the unit can fully accommodate a light stylus pressure cartridge.

**■Dependable one chip IC (See Fig. 27).**
First in development of the IC (AN630) of the Back Electromotive Force Frequency Generator system. The motor drive unit, control unit and various additional functions are integrated into the B.FG* system which utilize the Back Electromotive Force Frequency Generated in the drive winding of the Direct Drive motor.
Consequently, superior temperature, drift and transient characteristics are obtained improving the overall reliability of the turntable system.
The one chip IC (AN630) employed in this unit has a total of 321 elements such as transistors, diodes, resistors and capacitors consolidated in a silicon substrate approximately 3 × 2.7 $mm^2$ in size. We take pride in the fact that the one chip IC (AN630) represents the world's largest degree of integration as a bipolar linear IC.
* Back Electromotive Force Frequency Generator



One chip IC (AN 630)　　Interior of AN 630

Fig. 27

**■Hi-fidelity performance with rumble (signal to noise ratio) of −73 dB (DIN45539B), wow and flutter of 0.025% (W.R.M.S.).**
The ultra-low speed brushless DC motor employed in this unit has the extremely low power consumption of about 0.1 W, and is thus free from vibrations due to excessive energy or heat generation. The high performance of the Direct Drive motor is due to the efficiency of the newly developed double insulator and to the utilization of the one chip IC of the B.FG system.

**■Turntable base is of diecast aluminum for slim and compact design.**

**■Newly designed turntable rubber mat with improved record adherence.**

**■Prism type strobe illuminator also serves as pilot lamp.**

**Cross section of motor portion and double insulator**

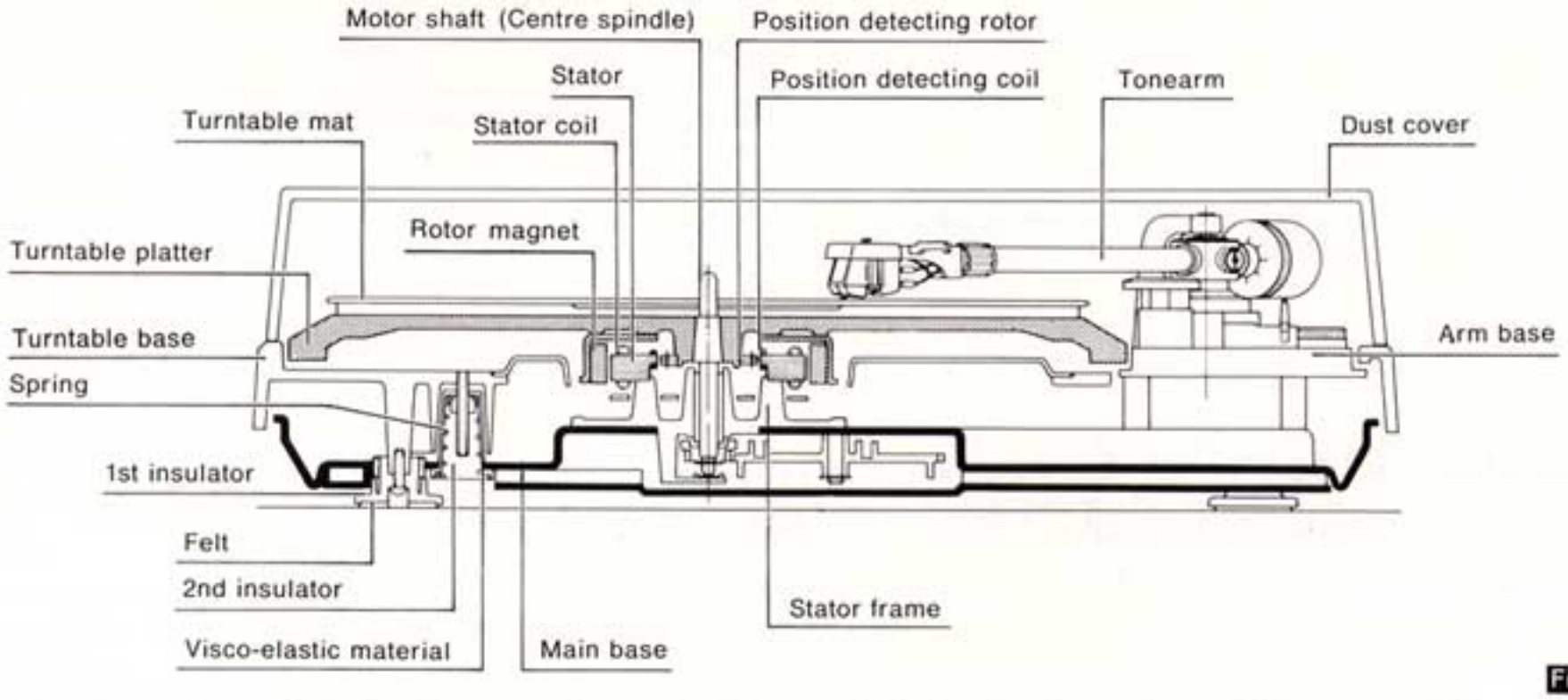



Fig. 26

## Tonearm section

**■ Highly sensitive universal tonearm**

Highly sensitive universal tonearm of the gimbal suspension system in which precision pivot bearings are employed at the horizontal and vertical journals of the tonearm has made it possible to realize arm friction of 7 mg. Therefore, the performance of the high-compliance cartridge can be fully realized.
Furthermore, the tonearm base is integrally formed with a die-cast zinc alloy finish of high specific gravity to lend sufficient strength and weight and thus completely eliminates undesirable vibrations.

**■ Diecast aluminum head shell**

The head shell integrally formed by strong diecast aluminum for reduction in weight is protected from harmful head shell resonance. Additionally, the head shell terminals are gold-plated for prevention of contact faults at replacement.

**■ Viscous damped cueing**

To prevent damage to the stylus tip and records liable to take place during operation of the tonearm, a cueing device damped with viscous oil is adopted.
Since the tonearm can be raised or lowered through operation of the lever, location of a desired playing portion or temporary suspension of the playing are conveniently achieved.

**■ Anti-skating control**

Proper outside force can be applied by such a simple operation as aligning the knob with the same value as the stylus pressure, thus cancelling the skating force harmful to the stylus tip.

**■ Low-capacitance phono cables that will not impair the high-frequency characteristics of the cartridge**

# Specifications

## Turntable section

| | |
|---|---|
| **Type** | Direct Drive Automatic Turntable System, Automatic return Automatic shut-off |
| **Drive method** | Direct Drive |
| **Motor** | Back Electromotive Force Frequency Generator servo DC motor employing one chip IC |
| **Turntable platter** | Aluminum die-cast, 33 cm (13") |
| **Turntable speeds** | 33-1/3 and 45 r.p.m. |
| **Pitch controls** | Individual adjustment controls, 10% adjustment range |
| **Wow and flutter** | 0.025% W.R.M.S. (JIS C5521)<br>±0.035% Weighted zero to peak (DIN 45507) |
| **Rumble** | −50 dB (DIN 45539A)<br>−73 dB (DIN 45539B) |

## Tonearm section

| | |
|---|---|
| **Type** | Universal tubular arm, static-balanced type |
| **Effective length** | 230 mm (9-1/16") |
| **Overhang** | 15 mm (19/32") |
| **Friction** | 7 mg (horizontally and vertically) |
| **Effective mass** | 22 g (6.0 g cartridge weight 1.75 g stylus pressure) |
| **Tracking error angle** | Within +3° (at the point of 145 mm (5-45/64") from the centre)<br>Within +1° (at the point of 55 mm (2-3/16") from the centre) |
| **Offset angle** | 21.5° |
| **Adjustable stylus pressure range** | 0 to 3 g (stylus pressure direct reading type) |
| **Cartridge weight range** | 5 to 11 g |
| **Head shell weight** | 9.5 g |

## General

| | |
|---|---|
| **Power supply** | AC 120 V, 50/60 Hz |
| **Power consumption** | 6 W |
| **Dimensions (H × W × D)** | 12.5 × 45.3 × 36.9 cm (4-15/16 × 17-12/16 × 14-9/16 inches) |
| **Weight** | 8.8 kg (19.4 lbs.) |

Weight and dimensions shown are approximate.
Specifications subject to change without notice.

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